

## **What Is Claimed Is:**

1           1. A method of processing orders related to a family of products in a supply chain  
2 management system, said family of products containing a plurality of member items, said  
3 method comprising:

4           receiving in a computer system a time fence (TF) duration associated with each of  
5 said plurality of member items in relation to a first member item, wherein said first member  
6 item is also contained in said plurality of member items, said TF duration representing an  
7 amount of advance time duration after which the supply of the corresponding member item  
8 is available to satisfy the demand for said first member item;

9           receiving in said computer system a first order specifying a first quantity of said first  
10 member item and a first required date, wherein said first required date is after said TF  
11 duration from a time said first order is received, and wherein only Qavail units of said first  
12 member item are scheduled to be available as of said first required date, wherein Qavail is  
13 less than said first quantity;

14           determining in said computer system whether at least said first quantity of all of said  
15 plurality of member items is scheduled to be available as of said first required date; and

16           promising in said computer system said first order if said determining determines that  
17 at least said first quantity of all of said plurality of member items is scheduled to be available  
18 as of said first required date.

1           2. The method of claim 1, wherein said TF duration is equal for all pairs of member  
2 items contained in said plurality of member items, and wherein said TF duration equals

3 aggregate TF (ATF) duration.

1 3. The method of claim 2, if said determining determines that at least said first  
2 quantity of all of said plurality of member items is not scheduled to be available as of said  
3 first required date, further comprising:

4 , computing an ATP date in which said first quantity of said first member item will be  
5 available based on availability of number of units of said member item available as of the end  
6 of said ATF duration and number of units of all of said plurality of member items after said  
7 ATF duration; and

8 accepting said first order with a promise date equaling said ATP date.

1 4. The method of claim 3, wherein a user is provided an option to indicate whether  
2 said ATP date is acceptable, wherein said accepting is performed only if said user indicates  
3 that said ATP date is acceptable.

1 5. The method of claim 3, further comprising:

2 if said first requested quantity is greater than  $(Q_{atp} - Q_{atf})$ , allocating  $(Q_{atp} - Q_{atf})$  on  
3 said first requested date from all of said plurality of member items and  $(Q_{req} - Q_{atp} + Q_{atf})$   
4 at an end day of said ATF duration from said first member item,

5 if said first requested quantity is less than or equal to  $(Q_{atp} - Q_{atf})$ , allocating said first  
6 requested quantity on said ATP date,

7 wherein  $Q_{atp}$  represents the aggregate available units as of said ATP date from all of

8 said plurality of member items, Qatf represents the aggregate available units of said first  
9 member item at the end of said ATF duration, and Qreq equals said first requested quantity.

1 6. The method of claim 3, further comprising:  
2 checking whether an override flag is associated with said first order; and  
3 accepting said first order if said override flag is associated with said first order even  
4 if said determining determines that at least said first quantity of all of said plurality of  
5 member items is not scheduled to be available as of said first required date,  
6 wherein said computing and accepting with said promise date are performed only if  
7 said override flag is not associated with said first order.

1 7. The method of claim 6, further comprising rejecting said order if said override flag  
2 is not associated with said first order and if said ATP date is not acceptable to a user placing  
3 said first order.

1 8. The method of claim 6, if said override flag is associated with said first order,  
2 further comprising:  
3 allocating (Qreq-Qatf) on said first requested date and Qatf on the last day of said  
4 ATF duration, wherein Qatf represents the aggregate available units of said first member item  
5 at the end of said ATF duration, and Qreq equals said first requested quantity.

1 9. The method of claim 2, further comprising:

2           computing in said computer system a present family availability indicating an  
3           aggregate quantity of said plurality of member items available on said first required date; and  
4           allocating in said computer system a first portion from said present family  
5           availability and a second portion from quantity scheduled to be available for said first  
6           member item as of end of said ATF duration.

1           10. The method of claim 9, further comprising:

2           computing in said computer system a cumulative item availability for said first  
3           member item in each day in said ATF duration, and maintaining in said computer system said  
4           present family availability associated with each day after said ATF duration, wherein said  
5           determining comprises examining said cumulative item availability and said present family  
6           availability such that said determining can be performed quickly.

1           11. The method of claim 9, wherein said determining comprises:

2           performing a first comparison of said first quantity and (said present family  
3           availability as of said required date - said cumulative item availability at the end of said ATF  
4           duration), wherein '-' indicates a subtraction operation;

5           if said first comparison provides a less than result, said second portion equaling 0, and  
6           said first portion being allocated from said present family availability on said first required  
7           date; and

8           if said first comparison provides a greater than or equal to result, said first portion  
9           equaling (said present family availability as of said required date - said cumulative item

10 availability at the end of said ATF duration), and said second portion equaling said required  
11 quantity less said first portion.

1 12. The method of claim 2, further comprising:  
2 receiving in said computer system a third order specifying a third quantity of said first  
3 member item and a third required date, wherein said third required date is within said ATF  
4 duration, wherein said third quantity is less than or equal to said cumulative item availability  
5 on said third required date; and  
6 promising in said computer system that said third order can be promised.

1 13. The method of claim 2, further comprising:  
2 receiving in said computer system a fourth order specifying a fourth quantity of said  
3 first member item and a fourth required date, wherein said fourth required date is within said  
4 ATF duration, wherein said fourth quantity is greater than said cumulative item availability  
5 on said fourth required date;  
6 determining said cumulative item availability (Qatf) at the end of said ATF duration;  
7 checking if said fourth quantity is less than or equal to said Qatf; and  
8 if said fourth quantity is less than or equal to said Qatf, checking in said computer  
9 system whether a first override flag is associated with said fourth order, and allocating said  
10 fourth quantity on said fourth required date if said first override flag is associated with said  
11 fourth order.

1           14. The method of claim 13, if said fourth quantity is less than or equal to said Qatf  
2           and if said override flag is not associated with said fourth order, further comprising:  
3           determining a date Xatp on which said fourth quantity is available; and  
4           accepting said fourth order only if a promise date of said Xatp is acceptable to a user  
5           placing said fourth order.

1           15. The method of claim 14, further comprising rejecting said fourth order if said  
2           override flag is not associated with said fourth order and if said Xatp is not acceptable as said  
3           promise date to said user.

1           16. The method of claim 13, if said fourth quantity is greater than said Qatf, further  
2           comprising:  
3           checking whether an override flag is associated with said fourth order;  
4           if said override flag is associated with said fourth order, allocating Qatf on said fourth  
5           required date and (fourth required quantity less said Qatf) on a day following said ATF  
6           duration.

1           17. The method of claim 16, if said fourth quantity is greater than said Qatf and if  
2           said override flag is not associated with said fourth order, said method comprising:  
3           computing in said computer system a date (Xatp) after said fourth required date and  
4           a corresponding Qatp on which said fourth quantity is available;  
5           checking in the said computer system whether said Xatp is acceptable as a promise

6 date; and

7 rejecting said fourth order is said Xatp is not acceptable as a promise date.

1 18. The method of claim 17, if said Xatp is acceptable as a promise date, further  
2 comprising:

3 performing a fourth comparison in said computer system to determine whether said  
4 fourth quantity is less than or equal to  $(Q_{atp}-Q_{atf})$ ;

5 if said fourth quantity is less than  $(Q_{atp}-Q_{atf})$ , allocating said fourth quantity on said  
6 ATP date;

7 if said fourth quantity is greater than  $(Q_{atp}-Q_{atf})$ , allocating said  $(Q_{atp}-Q_{atf})$  on said  
8 ATP date and  $(\text{said fourth quantity} - Q_{atp} + Q_{atf})$  on last day of said ATF duration.

1 19. The method of claim 2, further comprising:

2 receiving a request to un-schedule one of a previously promised orders;

3 determining whether said previously promised order is based on a tenth quantity  
4 scheduled to be available within said ATF duration;

5 using said tenth quantity to meet unmet demands related to the same member item as  
6 the member item for which said previously promised order relates to.

1 20. The method of claim 19, further comprising:

2 determining whether said previously promised order is based on an eleventh quantity  
3 scheduled to be available after said ATF duration;

4 using said tenth quantity to meet unmet demands related to any of said plurality of  
5 member items.

1 21. A computer readable medium carrying one or more sequences of instructions for  
2 causing a computer system to process orders related to a family of products in a supply chain  
3 management system, said family of products containing a plurality of member items, wherein  
4 execution of said one or more sequences of instructions by one or more processors contained  
5 in said computer system causes said one or more processors to perform the actions of:

6 receiving in a computer system a time fence (TF) duration associated with each of  
7 said plurality of member items in relation to a first member item, wherein said first member  
8 item is also contained in said plurality of member items, said TF duration representing an  
9 amount of advance time duration after which the supply of the corresponding member item  
10 is available to satisfy the demand for said first member item;

11 receiving a first order specifying a first quantity of said first member item and a first  
12 required date, wherein said first required date is after said ATF duration from a time said first  
13 order is received, and wherein only Qavail units of said first member item are scheduled to  
14 be available as of said first required date, wherein Qavail is less than said first quantity;

15 determining whether at least said first quantity of all of said plurality of member items  
16 is scheduled to be available as of said first required date; and

17 promising said first order if said determining determines that at least said first quantity  
18 of all of said plurality of member items is scheduled to be available as of said first required  
19 date.



1           22. The computer readable medium of claim 21, wherein said TF duration is equal  
2           for all pairs of member items contained in said plurality of member items, and wherein said  
3           TF duration equals aggregate TF (ATF) duration.

1           23. The computer readable medium of claim 22, if said determining determines that  
2           at least said first quantity of all of said plurality of member items is not scheduled to be  
3           available as of said first required date, further comprising:

4           computing an ATP date in which said first quantity of said first member item will be  
5           available based on availability of number of units of said member item available as of the end  
6           of said ATF duration and number of units of all of said plurality of member items after said  
7           ATF duration; and

8           accepting said first order with a promise date equaling said ATP date.

1           24. The computer readable medium of claim 23, wherein a user is provided an option  
2           to indicate whether said ATP date is acceptable, wherein said accepting is performed only  
3           if said user indicates that said ATP date is acceptable.

1           25. The computer readable medium of claim 23, further comprising:

2           if said first requested quantity is greater than  $(Q_{atp} - Q_{atf})$ , allocating  $(Q_{atp} - Q_{atf})$  on  
3           said first requested date from all of said plurality of member items and  $(Q_{req} - Q_{atp} + Q_{atf})$   
4           at an end day of said ATF duration from said first member item,

5           if said first requested quantity is less than or equal to  $(Q_{atp} - Q_{atf})$ , allocating said first

6 requested quantity on said ATP date,

7 wherein Qatp represents the aggregate available units as of said ATP date from all of  
8 said plurality of member items, Qatf represents the aggregate available units of said first  
9 member item at the end of said ATF duration, and Qreq equals said first requested quantity.

1 26. The computer readable medium of claim 23, further comprising:  
2 checking whether an override flag is associated with said first order; and  
3 accepting said first order if said override flag is associated with said first order even  
4 if said determining determines that at least said first quantity of all of said plurality of  
5 member items is not scheduled to be available as of said first required date,  
6 wherein said computing and accepting with said promise date are performed only if  
7 said override flag is not associated with said first order.

1 27. The computer readable medium of claim 26, further comprising rejecting said  
2 order if said override flag is not associated with said first order and if said ATP date is not  
3 acceptable to a user placing said first order.

1 28. The computer readable medium of claim 26, if said override flag is associated  
2 with said first order, further comprising:  
3 allocating (Qreq-Qatf) on said first requested date and Qatf on the last day of said  
4 ATF duration, wherein Qatf represents the aggregate available units of said first member item  
5 at the end of said ATF duration, and Qreq equals said first requested quantity.

1           29. The computer readable medium of claim 22, further comprising:  
2           computing in said computer system a present family availability indicating an  
3           aggregate quantity of said plurality of member items available on said first required date; and  
4           allocating in said computer system a first portion from said present family  
5           availability and a second portion from quantity scheduled to be available for said first  
6           member item as of end of said ATF duration.

1           30. The computer readable medium of claim 29, further comprising:  
2           computing in said computer system a cumulative item availability for said first  
3           member item in each day in said ATF duration, and maintaining in said computer system said  
4           present family availability associated with each day after said ATF duration, wherein said  
5           determining comprises examining said cumulative item availability and said present family  
6           availability such that said determining can be performed quickly.

1           31. The computer readable medium of claim 29, wherein said determining comprises:  
2           performing a first comparison of said first quantity and (said present family  
3           availability as of said required date - said cumulative item availability at the end of said ATF  
4           duration), wherein '-' indicates a subtraction operation;  
5           if said first comparison provides a less than result, said second portion equaling 0, and  
6           said first portion being allocated from said present family availability on said first required  
7           date; and

8 if said first comparison provides a greater than or equal to result, said first portion  
9 equaling (said present family availability as of said required date - said cumulative item  
10 availability at the end of said ATF duration), and said second portion equaling said required  
11 quantity less said first portion.

1 32. The computer readable medium of claim 22, further comprising:

2 receiving in said computer system a third order specifying a third quantity of said first  
3 member item and a third required date, wherein said third required date is within said ATF  
4 duration, wherein said third quantity is less than or equal to said cumulative item availability  
5 on said third required date; and

6 promising in said computer system that said third order can be promised.

1 33. The computer readable medium of claim 22, further comprising:

2 receiving in said computer system a fourth order specifying a fourth quantity of said  
3 first member item and a fourth required date, wherein said fourth required date is within said  
4 ATF duration, wherein said fourth quantity is greater than said cumulative item availability  
5 on said fourth required date;

6 determining said cumulative item availability (Qatf) at the end of said ATF duration;

7 checking if said fourth quantity is less than or equal to said Qatf; and

8 if said fourth quantity is less than or equal to said Qatf, checking in said computer  
9 system whether a first override flag is associated with said fourth order, and allocating said  
10 fourth quantity on said fourth required date if said first override flag is associated with said

11 fourth order.

1 34. The computer readable medium of claim 33, if said fourth quantity is less than  
2 or equal to said Qatf and if said override flag is not associated with said fourth order, further  
3 comprising:

4 determining a date Xatp on which said fourth quantity is available; and  
5 accepting said fourth order only if a promise date of said Xatp is acceptable to a user  
6 placing said fourth order.

1 35. The computer readable medium of claim 34, further comprising rejecting said  
2 fourth order if said override flag is not associated with said fourth order and if said Xatp is  
3 not acceptable as said promise date to said user.

1 36. The computer readable medium of claim 33, if said fourth quantity is greater than  
2 said Qatf, further comprising:  
3 checking whether an override flag is associated with said fourth order;  
4 if said override flag is associated with said fourth order, allocating Qatf on said fourth  
5 required date and (fourth required quantity less said Qatf) on a day following said ATF  
6 duration.

1 37. The computer readable medium of claim 36, if said fourth quantity is greater than  
2 said Qatf and if said override flag is not associated with said fourth order, further comprising:

3            computing in said computer system a date (Xatp) after said fourth required date and  
4            a corresponding Qatp on which said fourth quantity is available;  
5            checking in the said computer system whether said Xatp is acceptable as a promise  
6            date; and  
7            rejecting said fourth order if said Xatp is not acceptable as a promise date.

1            38. The computer readable medium of claim 37, if said Xatp is acceptable as a  
2            promise date, further comprising:

3            performing a fourth comparison in said computer system to determine whether said  
4            fourth quantity is less than or equal to (Qatp-Qatf);

5            if said fourth quantity is less than (Qatp-Qatf), allocating said fourth quantity on said  
6            ATP date;

7            if said fourth quantity is greater than (Qatp-Qatf), allocating said (Qatp-Qatf) on said  
8            ATP date and (said fourth quantity- Qatp+Qatf) on last day of said ATF duration.

1            39. The computer readable medium of claim 22, further comprising:

2            receiving a request to un-schedule one of a previously promised orders;

3            determining whether said previously promised order is based on a tenth quantity  
4            scheduled to be available within said ATF duration;

5            using said tenth quantity to meet unmet demands related to the same member item as  
6            the member item for which said previously promised order relates to.

1           40. The computer readable medium of claim 39, further comprising:  
2           determining whether said previously promised order is based on an eleventh quantity  
3           scheduled to be available after said ATF duration;  
4           using said tenth quantity to meet unmet demands related to any of said plurality of  
5           member items.

1           41. A computer system supporting a Supply Chain Management (SCM) system  
2           processing orders related to a family of products in said SCM system, said family of products  
3           containing a plurality of member items, said computer system being operable to:

4           receive in a computer system a time fence (TF) duration associated with each of said  
5           plurality of member items in relation to a first member item, wherein said first member item  
6           is also contained in said plurality of member items, said TF duration representing an amount  
7           of advance time duration after which the supply of the corresponding member item is  
8           available to satisfy the demand for said first member item;

9           receive a first order specifying a first quantity of said first member item and a first  
10          required date, wherein said first required date is after said ATF duration from a time said first  
11          order is received, and wherein only Qavail units of said first member item are scheduled to  
12          be available as of said first required date, wherein Qavail is less than said first quantity;

13          determine whether at least said first quantity of all of said plurality of member items  
14          is scheduled to be available as of said first required date; and

15          promise said first order if said determining determines that at least said first quantity  
16          of all of said plurality of member items is scheduled to be available as of said first required

17 date.

1 42. The computer system of claim 41, wherein said TF duration is equal for all pairs  
2 of member items contained in said plurality of member items, and wherein said TF duration  
3 equals aggregate TF (ATF) duration.

1 43. The computer system of claim 42, if said determine determines that at least said  
2 first quantity of all of said plurality of member items is not scheduled to be available as of  
3 said first required date, said computer system being further operable to:

4 compute an ATP date in which said first quantity of said first member item will be  
5 available based on availability of number of units of said member item available as of the end  
6 of said ATF duration and number of units of all of said plurality of member items after said  
7 ATF duration; and

8 accept said first order with a promise date equaling said ATP date.

1 44. The computer system of claim 43, wherein a user is provided an option to indicate  
2 whether said ATP date is acceptable, wherein said accept is performed only if said user  
3 indicates that said ATP date is acceptable.

1 45. The computer system of claim 43, said computer system being further operable  
2 to:  
3 if said first requested quantity is greater than (Qatp-Qatf), allocating (Qatp-Qatf) on



4 said first requested date from all of said plurality of member items and  $(Q_{req} - Q_{atp} + Q_{atf})$   
5 at an end day of said ATF duration from said first member item,

6 if said first requested quantity is less than or equal to  $(Q_{atp} - Q_{atf})$ , allocate said first  
7 requested quantity on said ATP date,

8 wherein  $Q_{atp}$  represents the aggregate available units as of said ATP date from all of  
9 said plurality of member items,  $Q_{atf}$  represents the aggregate available units of said first  
10 member item at the end of said ATF duration, and  $Q_{req}$  equals said first requested quantity.

1 46. The computer system of claim 43, said computer system being further operable  
2 to:

3 check whether an override flag is associated with said first order; and  
4 accept said first order if said override flag is associated with said first order even if  
5 said determining determines that at least said first quantity of all of said plurality of member  
6 items is not scheduled to be available as of said first required date,

7 wherein said computing and accepting with said promise date are performed only if  
8 said override flag is not associated with said first order.

1 47. The computer system of claim 46, said computer system being further operable  
2 to reject said order if said override flag is not associated with said first order and if said ATP  
3 date is not acceptable to a user placing said first order.

1 48. The computer system of claim 46, if said override flag is associated with said first

2 order, said computer system being further operable to:

3 allocate (Qreq-Qatf) on said first requested date and Qatf on the last day of said ATF  
4 duration, wherein Qatf represents the aggregate available units of said first member item at  
5 the end of said ATF duration, and Qreq equals said first requested quantity.

1 49. The computer system of claim 42, said computer system being further operable  
2 to:

3 compute in said computer system a present family availability indicating an aggregate  
4 quantity of said plurality of member items available on said first required date; and

5 allocate in said computer system a first portion from said present family  
6 availability and a second portion from quantity scheduled to be available for said first  
7 member item as of end of said ATF duration.

1 50. The computer system of claim 49, said computer system being further operable  
2 to:

3 compute in said computer system a cumulative item availability for said first member  
4 item in each day in said ATF duration, and maintaining in said computer system said present  
5 family availability associated with each day after said ATF duration, wherein said determine  
6 comprises examining said cumulative item availability and said present family availability  
7 such that said determining can be performed quickly.

1 51. The computer system of claim 49, wherein said determine comprises:

2 performing a first comparison of said first quantity and (said present family  
3 availability as of said required date - said cumulative item availability at the end of said ATF  
4 duration), wherein '-' indicates a subtraction operation;

5 if said first comparison provides a less than result, said second portion equaling 0, and  
6 said first portion being allocated from said present family availability on said first required  
7 date; and

8 if said first comparison provides a greater than or equal to result, said first portion  
9 equaling (said present family availability as of said required date - said cumulative item  
10 availability at the end of said ATF duration), and said second portion equaling said required  
11 quantity less said first portion.

1 52. The computer system of claim 42, said computer system being further operable  
2 to:

3 receive in said computer system a third order specifying a third quantity of said first  
4 member item and a third required date, wherein said third required date is within said ATF  
5 duration, wherein said third quantity is less than or equal to said cumulative item availability  
6 on said third required date; and

7 promise in said computer system that said third order can be promised.

1 53. The computer system of claim 42, said computer system being further operable  
2 to:

3 receive in said computer system a fourth order specifying a fourth quantity of said

4 first member item and a fourth required date, wherein said fourth required date is within said  
5 ATF duration, wherein said fourth quantity is greater than said cumulative item availability  
6 on said fourth required date;

7 determine said cumulative item availability (Qatf) at the end of said ATF duration;

8 check if said fourth quantity is less than or equal to said Qatf; and

9 if said fourth quantity is less than or equal to said Qatf, checking in said computer  
10 system whether a first override flag is associated with said fourth order, and allocate said  
11 fourth quantity on said fourth required date if said first override flag is associated with said  
12 fourth order.

1 54. The computer system of claim 53, if said fourth quantity is less than or equal to  
2 said Qatf and if said override flag is not associated with said fourth order, said computer  
3 system being further operable to:

4 determine a date Xatp on which said fourth quantity is available; and

5 accept said fourth order only if a promise date of said Xatp is acceptable to a user  
6 placing said fourth order.

1 55. The computer system of claim 54, said computer system being further operable  
2 to reject said fourth order if said override flag is not associated with said fourth order and if  
3 said Xatp is not acceptable as said promise date to said user.

1 56. The computer system of claim 53, if said fourth quantity is greater than said Qatf,

2 said computer system being further operable to:

3 check whether an override flag is associated with said fourth order;

4 if said override flag is associated with said fourth order, allocate Qatf on said fourth  
5 required date and (fourth required quantity less said Qatf) on a day following said ATF  
6 duration.

1 57. The computer system of claim 56, if said fourth quantity is greater than said Qatf  
2 and if said override flag is not associated with said fourth order, said computer system being  
3 further operable to:

4 compute in said computer system a date (Xatp) after said fourth required date and a  
5 corresponding Qatp on which said fourth quantity is available;

6 check in the said computer system whether said Xatp is acceptable as a promise date;  
7 and

8 reject said fourth order if said Xatp is not acceptable as a promise date.

1 58. The computer system of claim 57, if said Xatp is acceptable as a promise date,  
2 said computer system being further operable to:

3 perform a fourth comparison in said computer system to determine whether said  
4 fourth quantity is less than or equal to (Qatp-Qatf);

5 if said fourth quantity is less than (Qatp-Qatf), allocate said fourth quantity on said  
6 ATP date;

7 if said fourth quantity is greater than (Qatp-Qatf), allocating said (Qatp-Qatf) on said

8 ATP date and (said fourth quantity- Qatp+Qatf) on last day of said ATF duration.

1 59. The computer system of claim 42, said computer system being further operable

2 to:

3 receive a request to un-schedule one of a previously promised orders;

4 determine whether said previously promised order is based on a tenth quantity

5 scheduled to be available within said ATF duration;

6 use said tenth quantity to meet unmet demands related to the same member item as

7 the member item for which said previously promised order relates to.

1 60. The computer system of claim 59, said computer system being further operable

2 to:

3 determine whether said previously promised order is based on an eleventh quantity

4 scheduled to be available after said ATF duration;

5 use said tenth quantity to meet unmet demands related to any of said plurality of

6 member items.

1 61. A computer system supporting a Supply Chain Management (SCM) system

2 processing orders related to a family of products in said SCM system, said family of products

3 containing a plurality of member items, said computer system comprising:

4 means for receiving in a computer system a time fence (TF) duration associated with

5 each of said plurality of member items in relation to a first member item, wherein said first

6 member item is also contained in said plurality of member items, said TF duration  
7 representing an amount of advance time duration after which the supply of the corresponding  
8 member item is available to satisfy the demand for said first member item;

9 means for receiving a first order specifying a first quantity of said first member item  
10 and a first required date, wherein said first required date is after said ATF duration from a  
11 time said first order is received, and wherein only Qavail units of said first member item are  
12 scheduled to be available as of said first required date, wherein Qavail is less than said first  
13 quantity;

14 means for determining whether at least said first quantity of all of said plurality of  
15 member items is scheduled to be available as of said first required date; and

16 means for promising said first order if said means for determining determines that at  
17 least said first quantity of all of said plurality of member items is scheduled to be available  
18 as of said first required date.

1 62. The computer system of claim 61, wherein said TF duration is equal for all pairs  
2 of member items contained in said plurality of member items, and wherein said TF duration  
3 equals aggregate TF (ATF) duration.

1 63. The computer system of claim 62, if said means determining determines that at  
2 least said first quantity of all of said plurality of member items is not scheduled to be  
3 available as of said first required date, said computer system further comprising:

4 means for computing an ATP date in which said first quantity of said first member

5 item will be available based on availability of number of units of said member item available  
6 as of the end of said ATF duration and number of units of all of said plurality of member  
7 items after said ATF duration; and

8 means for accepting said first order with a promise date equaling said ATP date.

1 64. The computer system of claim 63, wherein a user is provided an option to indicate  
2 whether said ATP date is acceptable, wherein said means for accepting accepts said first  
3 order only if said user indicates that said ATP date is acceptable.

1 65. The computer system of claim 63, further comprising:  
2 if said first requested quantity is greater than  $(Q_{atp} - Q_{atf})$ , means for allocating  $(Q_{atp} -$   
3  $Q_{atf})$  on said first requested date from all of said plurality of member items and  $(Q_{req} - Q_{atp}$   
4  $+ Q_{atf})$  at an end day of said ATF duration from said first member item,  
5 if said first requested quantity is less than or equal to  $(Q_{atp} - Q_{atf})$ , means for  
6 allocating said first requested quantity on said ATP date,  
7 wherein  $Q_{atp}$  represents the aggregate available units as of said ATP date from all of  
8 said plurality of member items,  $Q_{atf}$  represents the aggregate available units of said first  
9 member item at the end of said ATF duration, and  $Q_{req}$  equals said first requested quantity.

1 66. The computer system of claim 63, further comprising:  
2 means for checking whether an override flag is associated with said first order; and  
3 means for accepting said first order if said override flag is associated with said first



4 order even if said determining determines that at least said first quantity of all of said  
5 plurality of member items is not scheduled to be available as of said first required date,  
6 wherein said computing and accepting with said promise date are performed only if  
7 said override flag is not associated with said first order.

1 67. The computer system of claim 66, further comprising means for rejecting said  
2 order if said override flag is not associated with said first order and if said ATP date is not  
3 acceptable to a user placing said first order.

1 68. The computer system of claim 66, if said override flag is associated with said first  
2 order, further comprising:

3 means for allocating (Qreq-Qatf) on said first requested date and Qatf on the last day  
4 of said ATF duration, wherein Qatf represents the aggregate available units of said first  
5 member item at the end of said ATF duration, and Qreq equals said first requested quantity.

1 69. The computer system of claim 62, further comprising:

2 means for computing in said computer system a present family availability indicating  
3 an aggregate quantity of said plurality of member items available on said first required date;  
4 and

5 means for allocating in said computer system a first portion from said present family  
6 availability and a second portion from quantity scheduled to be available for said first  
7 member item as of end of said ATF duration.

1           70. The computer system of claim 69, further comprising:

2           means for computing in said computer system a cumulative item availability for said  
3           first member item in each day in said ATF duration, and maintaining in said computer system  
4           said present family availability associated with each day after said ATF duration, wherein  
5           said determining comprises examining said cumulative item availability and said present  
6           family availability such that said determining can be performed quickly.

1           71. The computer system of claim 69, wherein said determining comprises:

2           means for performing a first comparison of said first quantity and (said present family  
3           availability as of said required date - said cumulative item availability at the end of said ATF  
4           duration), wherein '-' indicates a subtraction operation;

5           if said first comparison provides a less than result, said second portion equaling 0, and  
6           said first portion being allocated from said present family availability on said first required  
7           date; and

8           if said first comparison provides a greater than or equal to result, said first portion  
9           equaling (said present family availability as of said required date - said cumulative item  
10          availability at the end of said ATF duration), and said second portion equaling said required  
11          quantity less said first portion.

1           72. The computer system of claim 62, further comprising:

2           means for receiving in said computer system a third order specifying a third quantity

3 of said first member item and a third required date, wherein said third required date is within  
4 said ATF duration, wherein said third quantity is less than or equal to said cumulative item  
5 availability on said third required date; and

6 means for promising in said computer system that said third order can be promised.

1 73. The computer system of claim 62, further comprising:

2 means for receiving in said computer system a fourth order specifying a fourth  
3 quantity of said first member item and a fourth required date, wherein said fourth required  
4 date is within said ATF duration, wherein said fourth quantity is greater than said cumulative  
5 item availability on said fourth required date;

6 means for determining said cumulative item availability (Qatf) at the end of said ATF  
7 duration;

8 means for checking if said fourth quantity is less than or equal to said Qatf; and

9 if said fourth quantity is less than or equal to said Qatf, means for checking in said  
10 computer system whether a first override flag is associated with said fourth order, and  
11 allocating said fourth quantity on said fourth required date if said first override flag is  
12 associated with said fourth order.

1 74. The computer system of claim 73, if said fourth quantity is less than or equal to  
2 said Qatf and if said override flag is not associated with said fourth order, further comprising:

3 means for determining a date Xatp on which said fourth quantity is available; and

4 means for accepting said fourth order only if a promise date of said Xatp is acceptable

5 to a user placing said fourth order.

1 75. The computer system of claim 74, further comprising means for rejecting said  
2 fourth order if said override flag is not associated with said fourth order and if said Xatp is  
3 not acceptable as said promise date to said user.

1 76. The computer system of claim 73, if said fourth quantity is greater than said Qatf,  
2 further comprising:  
3 means for checking whether an override flag is associated with said fourth order;  
4 if said override flag is associated with said fourth order, means for allocating Qatf on  
5 said fourth required date and (fourth required quantity less said Qatf) on a day following said  
6 ATF duration.

1 77. The computer system of claim 76, if said fourth quantity is greater than said Qatf  
2 and if said override flag is not associated with said fourth order, said computer system  
3 comprising:  
4 means for computing in said computer system a date (Xatp) after said fourth required  
5 date and a corresponding Qatp on which said fourth quantity is available;  
6 means for checking in the said computer system whether said Xatp is acceptable as  
7 a promise date; and  
8 means for rejecting said fourth order if said Xatp is not acceptable as a promise date.

1           78. The computer system of claim 77, if said Xatp is acceptable as a promise date,  
2 further comprising:

3           means for performing a fourth comparison in said computer system to determine  
4 whether said fourth quantity is less than or equal to ( $Q_{atp}-Q_{atf}$ );

5           if said fourth quantity is less than ( $Q_{atp}-Q_{atf}$ ), means for allocating said fourth  
6 quantity on said ATP date;

7           if said fourth quantity is greater than ( $Q_{atp}-Q_{atf}$ ), means for allocating said ( $Q_{atp}-$   
8  $Q_{atf}$ ) on said ATP date and (said fourth quantity-  $Q_{atp}+Q_{atf}$ ) on last day of said ATF  
9 duration.

1           79. The computer system of claim 62, further comprising:

2           means for receiving a request to un-schedule one of a previously promised orders;

3           means for determining whether said previously promised order is based on a tenth  
4 quantity scheduled to be available within said ATF duration;

5           means for using said tenth quantity to meet unmet demands related to the same  
6 member item as the member item for which said previously promised order relates to.

1           80. The computer system of claim 79, further comprising:

2           means for determining whether said previously promised order is based on an  
3 eleventh quantity scheduled to be available after said ATF duration;

4           means for using said tenth quantity to meet unmet demands related to any of said  
5 plurality of member items.